**Template | Unit Enhancement**

***EXPLANATION & ARGUMENTATION***

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**Background Information**

**Instructional Materials Title: Circuits and Pathways**

**Publication Date: STC: 1997,2003 Instructional Guide: 2009**

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**Date Developed: August 21, 2013**

**High Leverage Lesson (Learning Experience 5: Conductors and Nonconductors):**

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**Rationale**

* Early in the unit allows for us to build competencies
* Data collection
* Straightforward and focused on specific scientific concept

**4-5 PS3 E:**

* **Electrical energy in circuits can be changed to other forms of energy, including light, heat, sound, and motion.**
* **Electric circuits require a complete loop through conducting materials in which an electric current can pass.**

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***Explanation* Lesson Enhancement**

**Overview**

· **Identification of where within the High Leverage Lesson to insert enhancement**

· **Key instructional strategies and tools needed**

**Part 1: Lesson Modifications to Lead Up to *Explanation* Experience**

Addition of “Materials” column to the data to help students synthesize data.

**Part 2: *Explanation* Learning Sequence**

See *Circuits and Pathways* instructional guide.

**Part 3-A: Describe Assessment Task**

*Include the* ***question****,* ***evidence*** *students will use, and* ***scientific concepts*** *students will use in their reasoning.*

Students will write a CER explanation to answer the following question:

**Question:** *Conductors are materials that allow electric current to flow. What materials are conductors of electric current?*

**Part 3-B: Assessment Rubric**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Claim**  *A statement or conclusion that answers the original question/ problem* | **Evidence**  *Scientific data that supports the claim. Data needs to be appropriate and sufficient to support the claim* | **Reasoning**  *A justification that connects the evidence to the claim. It shows why the data count as evidence by using appropriate or sufficient scientific principal* |
| 0 | Does not make a claim, or makes an inaccurate claim like, “The sponge does not light the bulb.” | Does not provide evidence, or only provides inappropriate or vague evidence, like “The data show me that.” Or “The table is evidence.” | Does not provide reasoning, or provides inappropriate reasoning, like “Didn’t work.” |
| 1 | Makes an accurate but vague claim and fails to generalize, “The screw allowed electric current to flow.” | Provides 1 of the following:   * The screw/foil/penny allowed the bulb to light.   May also include inappropriate evidence. | Provides 1 of the following:   * The screw, foil and penny allowed current to flow/are conductors. * The screw, foil and penny allowed for a complete circuit. * The screw, foil and penny are all metals. * Metals are conductors of electric current. |
| 2 | Makes an accurate but vague claim, like “Metal.” | Provides 2 of the following:   * The screw/foil/penny allowed the bulb to light.   Provides 1 of the following:   * The straw/spoon/popsicle stick/ cardboard/sponge/marble did not allow the bulb to light.   May also include inappropriate evidence. | A: Provides 1 of the following:   * The screw, foil and penny allowed current to flow/are conductors. * The screw, foil and penny allowed for a complete circuit.   And Provides 1 of the following:   * The screw, foil and penny are all metals. * Metals are conductors of electric current.   OR  B: Provides 2 of the following:   * The screw, foil and penny are all metals. * Metals are conductors of electric current. |
| 3 | Makes and accurate and complete claim, like “Metals are conductors of electric current.” | Provides 2-3 of the following:   * The screw/foil/penny allowed the bulb to light.   Provides 2 of the following:   * The straw/spoon/popsicle stick/ cardboard/sponge/marble did not allow the bulb to light.   May also include inappropriate evidence. | Provides 1 of the following:   * The screw, foil and penny allowed current to flow/are conductors. * The screw, foil and penny allowed for a complete circuit.   Provides 2 of the following:   * The screw, foil and penny are all metals. * Metals are conductors of electric current. |
| 4 |  | Provides 3 of the following:   * The screw/foil/penny allowed the bulb to light.   Provides 3 of the following:   * The straw/spoon/popsicle stick/ cardboard/sponge/marble did not allow the bulb to light.   May also include inappropriate evidence. | Provides 1 of the following:   * The screw, foil and penny allowed current to flow/are conductors. * The screw, foil and penny allowed for a complete circuit.   Provides all of the following:   * The screw, foil and penny are all metals. * **Sponge/glass/etc. are not metals.** * **Sponge/glass/etc. are not conductors.** * Metals are conductors of electric current. |

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**Additional Information**

NOTES

· Information that will be useful when teaching this lesson

- Resources that will be useful

- Scaffolds that students will use